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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,790	09/17/2003	Shinzo Onishi	SO-1	4799

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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT	PAPER NUMBER
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1753

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/664,790

Applicant(s)

ONISHI, SHINZO

Examiner

Rodney G. McDonald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/2003</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 2, "the magnetic target surface" lacks antecedent basis.

Claim 1, line 3, both occurrences of "the substrates" lack antecedent basis.

Regarding claim 2, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention.

See MPEP § 2173.05(d).

Regarding claim 3, line 2, and "the plasma" lacks antecedent basis.

Regarding claim 3, line 2, the word "thick" lacks basis for comparison.

Regarding claim 4, lines 1 and 2, "the backing plate" lacks antecedent basis.

Claim 6, line 2, the phrase "may be used" fails to further limit the claim.

Claim 10, line 1, the phrase "the plasma feeding and cooling" lack antecedent basis.

Claim 11, line 2, "the entire erosion area" lacks antecedent basis.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (U.S. Pat. 4,405,436) in view of Sichmann (U.S. Pat. 5,266,178).

Regarding claim 1, Kobayashi et al. teach a magnetron sputtering system comprising permanent magnets fastened to a magnetic target surface facing substrates at an appropriate distance from the substrates. (See Fig. 1; Column 2 lines 35-65)

Regarding claim 2, Kobayashi et al. teach coating magnets with the same material as the target material to avoid contamination. (Column 1 lines 31-33; Column 2 lines 66-68; Column 3 lines 1-7)

Regarding claim 3, Kobayashi et al. teach that permanent magnets can be exposed directly to the plasma. (Column 1 lines 28-29)

Regarding claim 4, Kobayashi et al. teach mounting the permanent magnets on the target. (Column 4 lines 59-60) "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted)

Regarding claim 5, the target has a thickness. (Figs. 1-10)

Regarding claim 7, there can be an additional water jacket. (Column 2 lines 31-34)

Regarding claim 8, there is no rotating magnets. (See Figs. 1-10)

Regarding claim 9, the magnets provide a stable plasma for depositing material uniformly on the substrates. (Column 3 lines 9-25)

Regarding claim 10, there is no use of a high power motor with the apparatus since the magnets are stationary. (See Figs. 1-10) (This is from the interpretation that "High power motors" require rotating magnets as required by Applicant's specification Page 8 lines 11-13)

Regarding claim 11, the shape of the magnets provides magnetic flux over the entire erosion area due to the polarities of the magnets. (Column 2 lines 52-54; Column 4 lines 30-32)

The difference between Sichmann and the present claims is the use of a nonmagnetic target when a magnetic field is placed in front of the target is not discussed (claim 1) and where the target is nonplanar is not discussed (Claim 6).

Regarding the use of a nonmagnetic target when a magnetic field is placed in front of target (claim 1), Sichmann teach providing a target of nonmagnetic material for a magnetic field that passes over the front of the target surface. (See Abstract; Fig. 2; Column 3 lines 59-64)

Regarding a target that is nonplanar (Claim 6), Sichmann teach a target that is no planar in Fig. 2. (See Fig. 2; Column 4 lines 11-20)

The motivation for utilizing the features of Sichmann is that it allows for achieving an extreme uniform erosion rate from a nonmagnetic target. (Column 4 lines 21-23)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Kobayashi et al. by utilizing the features

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of Sichmann because it allows for achieving an extreme uniform erosion rate from a nonmagnetic target.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. in view of Sichmann as applied to claims 1-11 above, and further in view of Boys (U.S. Pat. 4,597,847).

The difference not yet discussed is where the target is laminated to a magnetic backing plate (claim 12).

Regarding claim 12, Boys teach a non-magnetic sputtering target bonded to a magnetic backing plate. (See Abstract)

The motivation for bonding a non-magnetic sputtering target to a magnetic backing plate is that it allows for providing magnetic enhancement during sputtering. (Column 6 lines 43-44)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized the feature of Boys because it allows for providing magnetic enhancement during sputtering.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

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F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-14 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 6,623,610 in view of Sichmann (U.S. Pat. 5,266,178).

Claims 1-14 of U.S. Pat. 6,623,610 suggest Applicant's claims except for sputtering and depositing a non-magnetic material.

Regarding the use of a nonmagnetic target when a magnetic field is placed in front of target, Sichmann teach providing a target of nonmagnetic material for a magnetic field that passes over the front of the target surface. (See Abstract; Fig. 2; Column 3 lines 59-64)

The motivation for utilizing the features of Sichmann is that it allows for achieving an extreme uniform erosion rate from a nonmagnetic target. (Column 4 lines 21-23)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the claims of U.S. Pat. 6,623,610 by utilizing the features of Sichmann because it allows for achieving an extreme uniform erosion rate from a nonmagnetic target.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

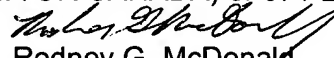
Funaki (U.S. Pat. 4,370,217) teach placing magnets on the front of a target surface for sputtering.

Inoguchi et al. (Japan 02-182879) teach placing magnets on a target surface for sputtering.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Rodney G. McDonald
Primary Examiner
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